

---

---

लाईब्रेरी पुस्तकों और पत्रिकाओं  
की प्रबलित जिल्द के लिए  
अभ्यास का कोड  
( पहला पुनरीक्षण )

**Code of Practice for Reinforced  
Binding of Library Books  
and Periodicals**  
( *First Revision* )

ICS 37.100.01

© BIS 2018



भारतीय मानक ब्यूरो  
BUREAU OF INDIAN STANDARDS  
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI-110002  
[www.bis.gov.in](http://www.bis.gov.in) [www.standardsbis.in](http://www.standardsbis.in)

## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the 'Publication and Graphic Technology Sectional Committee' had been approved by the 'Management and Systems Division Council'.

Library binding is a way to increase the life of books and periodicals used in libraries. This is done by sewing the pages in place and by reinforcing the spine for each volume. The goal of library binding is long-term preservation. This also benefits library patrons by ensuring that the volume in hand is complete, opened with ease, and easy to photocopy. In addition, many libraries re-bind damaged books in library bindings regardless of whether they were originally paperback or hardcover.

Book binding is done by sewing together loose leaves of paper to form a book block. Threads pass through small holes that have been punched in the signature's gutter margin (nearest the spine), forming over lock stitches that attach it to previously attached sections. A back lining (piece of linen/paper) is then glued to the book block spine for further support. The book's spine may be rounded and backed to keep it from caving in, but if the book block is too thick, the spine is sometimes left flat.

This Indian Standard was first published in 1965. In this revised standard, the scope has been expanded for binding of books and periodicals to include reinforced binding also. The various provisions as applicable to both binding and reinforced binding have been included in this revised version. The standard has been updated to cover latest techniques of binding. Additional terms and pre requisites of book block has also been added in this revised standard. Detailed procedure for binding has been explained.

# *Indian Standard*

## CODE OF PRACTICE FOR REINFORCED BINDING OF LIBRARY BOOKS AND PERIODICALS

### ( *First Revision* )

#### 1 SCOPE

This standard specifies styles, operations and materials required for binding of books and periodicals including reinforced binding of library books and periodicals.

#### 2 REFERENCE

The following standard contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the edition indicated were valid. The standard is subject to revision and parties to agreements based on this standard is encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

<i>IS No.</i>	<i>Title</i>
15306 (Part 4) : 2016/	Graphic technology —
ISO 12637-4 : 2008	Vocabulary: Part 4 Post press terms

#### 3 TERMINOLOGY

For the purpose of this standard the definitions given in IS 15306 (Part 4)/ISO 12637-4 and the following shall apply.

**3.1 Adhesive Binding** — Type of hard cover or soft cover binding in which signatures are milled and the sheets glued together by means of an adhesive.

**3.2 Binder's Board** — Rigid, solid board, made from straw and paper pulp, having grammage of 225 g/m<sup>2</sup> or more.

**3.3 Finishing** — Comprises lettering, tooling and polishing.

NOTE — It could also include colouring, gilding, marbling, etc.

**3.4 Folding Endurance** — Logarithm (to the base of 10) of the number of double folds required to cause rupture in a strip of paper 15mm wide, tested under applied standard stress conditions.

**3.5 Forwarding** — Steps in binding that take place after sewing and prior to a book being cased in.

NOTE — It usually includes rounding, backing and lining the spine and it may include tipping-in the endpapers.

**3.6 Fore-edge** — The front edge of the book opposite to the spine.

**3.7 French Joint** — The space provided between the board and the spine.

NOTE — French joint enables the board to swing back more freely than if they were fixed closely to the spine. This gives a greater area of the covering material to stand the strain of closing and opening the book.

**3.8 Flat Back** — The book having no rounding or backing at the spine.

**3.9 Full Binding** — The binding in which cover is made from one single piece covering material.

**3.10 Guard** — A thin strip of cloth or paper used at the spine of the signatures for reinforcing.

**3.11 Half Binding** — Covering the back and a part of the sides and the corners with material stronger than the one used for the rest of the sides.

**3.12 Head** — The top of a book.

**3.13 Headbands** — Strips of thread worked at the head and tail of the back.

**3.14 Inlay** — A strong and thick flexible strip of paper used to stiffen the spine of a case by centrally placing between two cover boards.

**3.15 Kettle Stitch** — The stitch which locks the sewing thread after each complete pass of the thread along the spine, at the head and tail of the signatures.

**3.16 Library Binding** — Rebinding of books which otherwise would be worn out by constant use.

**3.17 Mitring** — A joint at 45° in the covering material on the inside of the boards.

**3.18 Nipping** — The process of reducing the swell in the spine of thread sewn book block or gathered/collated signatures.

**3.19 Over-casting** — Over-sewing the back edges of single leaves or weak sections.

**3.20 Page** — One side of the sheet.

**3.21 Permanent Paper** — Paper which during long-term storage will undergo little or no changes in properties that affect its use.

**3.22 Rounding and Backing** — The process of shaping of a book block to a convex spine by a special machine (or by hand) after gluing and trimming.

NOTE — Rounding results in the characteristic convex spine and concave fore-edge of a hard cover book.

**3.23 Sheet** — The full size of paper, printed or unprinted, forming a section when folded.

**3.24 Section** — A folded sheet of paper.

**3.25 Size** — The size of a book is determined by the measurement of the book block.

**3.26 Slips** — The ends of the tapes or cords on which the book is sewned, that are attached to the board.

**3.27 Smashing and Nipping** — The process of compressing and removing the air from the folds, enabling flattening of the overall area of the book block.

**3.28 Soft Cover Book** — Book bound in flexible material, usually paper or light board, that can be made either from sewn leaves or as an adhesive binding from sheets glued together.

**3.29 Spine** — The thickness of the back edge of the book.

**3.30 Spine Inlay** — Strip of paper or board used to stiffen the spine of the case of a binding.

**3.31 Spine Gluing** — Process of applying adhesive to the spine of the book block after sewing.

**3.32 Split Board** — The board used in reinforced library binding, made by two mill-boards one thick

and the other thin-being glued together, except in the portion to be kept split. The depth of the split portion shall be not less than one-sixth of the width of the board.

**3.33 Squares** — The portion of the boards projecting beyond the edges of the book at head, tail and fore-edge.

**3.34 Tail** — The bottom of a book.

**3.35 Tipping** — Fixing of loose sheets or endpapers, to the signatures, applied with a thin line of adhesive along the binding edge.

**3.26 Turn In** — The part of the covering material which is turned over the outer edges of hard/soft cover.

## 4 STYLES

The various styles of book binding are as follows:

### 4.1 General Binding

### 4.2 Reinforced Binding for Library

## 5 BOOK BLOCK

### 5.1 Pre-requisites of Book Block

#### 5.1.1 Size of Book Block

For convenience of use and to avoid undue strain on the binding structure, the thickness of the book block shall not exceed 50 mm.

#### 5.1.2 Paper

Difference in grammage and flexibility between all papers used for the book block, including flyleaves,

**Table 1 Styles of General Binding**

SI No. (1)	Style (2)	Recommended Use (3)
i)	Wire stitched (centre or side) predominantly with soft cover	Periodicals, magazines, reports, journals and booklets in constant use
ii)	Thread sewn (centre, side or section) with a) Soft cover, or b) Hard cover	Text books, reference books and books of permanent value

**Table 2 Styles of Library Binding**

SI No. (1)	Style (2)	Recommended Use (3)
i)	Full leather	Rare books and books of permanent value
ii)	Half leather with linen or art canvas	Periodicals and books in constant use
iii)	Full linen or art canvas	Periodicals and books not in constant use
iv)	Half linen or art canvas or calico and marble	Pamphlets and books with weak paper

endpapers, spine inlays and paper for inserts, shall be as homogeneous as possible. The machine direction of all paper used for the book block, including paper for inserts, shall run parallel to the binding edge.

### 5.1.3 Margins

The text shall be imposed so that the inner margin measures at least 14 mm on both sides of the fold of the signature. For paper sizes wider than 144 mm, each inner margin shall measure at least 1/9 of the page width.

### 5.1.4 Endpapers

**5.1.4.1** Endpapers shall be formed from single sheets of paper folded in half. Endpapers shall be attached to the front and back signatures either by sewing or by tipping-in. If tipping-in is used, the fold of each endpaper shall line up with the fold of the signature, with a tolerance of + 0.5 mm. The adhesive line shall then be straight and between 3 to 5 mm in width. It should be made of good, thick, strong paper of 120 g/m<sup>2</sup> to 160 g/m<sup>2</sup> with high folding strength and it should be acid-free.

**5.1.4.2** Cambric material may be used as a reinforced material for folded endpapers, with tensile strength not less than 10.36 kg/cm for warp and 8.04 kg/cm for Fill and the tear resistance of 480 gms for warp and 464 gms for Fill.

**5.1.4.3** Drill material may be used as a reinforced material for endpapers for side sewn books, with tensile strength not less than 16.43 kg/cm for Warp & 9.82 kg/cm for Fill and the tear resistance of 680 gms for warp and 780 gms for Fill.

## 5.2 Preparation of Book Block

### 5.2.1 Folding

The book block shall be gathered from one or more signatures (folded sheets), all of which shall retain their folding edge. A signature shall not exceed 2.5 mm in thickness and shall be well pressed. If the imposition plan results in an odd sized signature, that is, a signature with a number of pages different from the others, this signature shall be placed between full-sized signatures.

### 5.2.2 Collating

All sections of the book shall be examined in respect of their sound condition, and collated and secured in proper sequence.

#### 5.2.2.1 Inserts

Inserts of 4 leaves (8 pages) or more shall be sewn in as signatures.

#### 5.2.2.2 Fold-outs

Fold-outs, for example, maps, larger than four times the size of the book format shall be contained in a book pocket. The extra sheets upto 2 pages shall be tipped with the relevant section before gathering.

### 5.2.3 Sewing

**5.2.3.1** The book block shall be made by sewing through the folds of the signatures. Signatures shall have as many stitches as the machine can employ, except for a kettle stitch distance of 10 mm from the head and 13 mm from the tail, which shall be left without stitches. The distance between stitches (discernible by measuring the spacing along the innermost fold of a signature) shall not be more than 25 mm. The thread used shall be strong and durable and shall be of the linen or unbleached cotton and soft enough not to injure the paper at any time.

**5.2.3.2** Whether the book will withstand rebinding should be determined before the order for the rebinding is given.

**5.2.3.3** The first and the last sections of all books shall be enclosed at the back in linen or muslin strips.

**5.2.3.4** All sections broken at the back shall be lined inside and outside at the fold with strips of rag, tissue paper, or with unsized muslin or linen strips, preferably serrated.

**5.2.3.5** All torn pages shall be repaired with Acid free transparent tissue paper or Similar, material without compromising the readability.

**5.2.3.6** When the paper of the volume is deteriorated and brittle, it shall be reinforced with transparent tissue paper or other similar material without compromising the readability.

**5.2.3.7** If have no sufficient margin in the spine side, repaired sheet will be guarded with good quality of Acid free handmade paper along with margin 2"- 2.5", depending on the size of book and thickness of spine.

**5.2.3.8** All folded plates, maps, plans and other extended sheets not forming part of a normal section shall be mounted on guards of linen or muslin or tough paper. Pasting of leaves larger than the format of the book shall not be permitted. All extended sheets shall be reinforced at the folds.

**5.2.3.9** All folded plates, maps, plans and other extended sheets shall be reinforced and, where necessary, be mounted on jaconet or thin linen or muslin of good quality.

**5.2.3.10** The reinforced binding will be done on tapes, the number of which will depend upon the depth of the book, as shown below:

<i>Depth in cm</i>	<i>No. of Tapes</i>
Not more than 15	2
Between 15 and 25	3
Between 25 and 35	4

For books of greater height, the number of tapes shall be increased suitably. The tapes, in excess of two, shall be equally spaced between the tapes near the head and the tail of the books. Tapes and cords should be of unbleached linen or good quality cotton, unsized and free from loose threads and mechanical defects.

**5.2.4** In the case of a periodical or a book published in instalments, all the issues of a volume and the sections making up the title, contents pages and indexes shall also be collated and assembled in the proper sequence.

**5.2.5** Covers and advertisement sheets in periodicals shall not be bound in unless:

- (a) they are included in the pagination of the text, and
- (b) they are required to be retained for other reasons.

**5.2.6** As far as practicable, assembling into volumes more than 45 mm in thickness should be avoided.

**5.2.7** Books printed on paper of good quality and for reinforced binding shall be sewn all along one section on, with thread of suitable thickness over linen or cotton tapes.

**5.2.7.1** Each of the end-papers for reinforced binding shall be sewn on as a section.

**5.2.7.2** Unbleached linen or cotton tapes shall be used. The width of the tape shall be 2 cm. There shall be one tape within 2.5 cm of the head and another within 2.5 cm from the tail.

**5.2.7.3** Straight line machine stitching shall not be used.

**5.2.7.4** Section sewing shall be so done that when the hook is opened, the pages of its two halves lie flat on a flat surface.

### **5.2.8 Nipping/Smashing and Nipping**

The book block is compressed to remove the trapped air from the signatures, enabling flattening of the overall area of the book block. It is then nipped to eliminate the excess swell at the spine.

### **5.2.9 Spine Gluing**

The spine of the book block shall receive a coating of adhesive or glue, prior to rounding and backing. The adhesive shall thoroughly coat the spine and penetrate no further through the sewing holes than to the innermost leaf. The adhesive shall be applied at the

proper consistency so that it does not seep unevenly between signatures. At no point shall the adhesive penetrate between the signatures to a depth of more than 1.0 mm.

### **5.2.10 Trimming**

The trimming shall be done as squarely and minimal as possible. In cases, where the book block is meant to be untrimmed, an overhang of 2 mm to 3 mm is allowed. The trimming of books (flat back) with soft cover shall be done after the cover is drawn over.

### **5.2.11 Rounding and Backing**

Book blocks shall be evenly rounded and backed to form a smooth convex spine and a concave fore-edge. These shall be backed to form shoulders that are symmetrical, uniform from head to tail, and nearly equal in size to the specified board thickness. Rounding and backing is not required for book blocks less than 13 mm thick.

### **5.2.12 Back Lining**

The lining shall be carried out either during the spine-gluing operation or during the casing-in operation. The lining material shall be evenly and securely attached to the spine. The lining material shall be mull or any other suitable cloth. Paper may only be used as a second lining on the mull. The application of cloth or mull shall extend at least 15 mm onto the endpaper. The machine direction of the paper shall run parallel to the spine.

## **5.3 Book Case**

### **5.3.1 Pre-requisites of Case Preparation**

**5.3.1.1** All cover materials shall have a sufficiently smooth surface to avoid dust retention. The covering material can be leather, rexine, linen, calico, art canvas or printed laminated/UV coated sheets. All cloth material employed shall perform adequately with respect to their strength, flexibility and other properties such as lay-flat, shrinkage, tensile strength, etc.

- a) **Paper** — The cover material shall have a pH-value in between 6 to 10. With cover material of a pH-value less than 7.0, acid migration from the cover to the book block shall be prevented by alkaline buffered endpapers of a grammage between 120 g/m<sup>2</sup> to 160 g/m<sup>2</sup>.
- b) **Cover material (woven)-linen/calico** — Unbleached book cloth, fabric base should be in-sized, cotton evenly woven, free from pin holes and other mechanical defects. Finished cloth shall be soft, pliable and should not show cracking surface when bent sharply. It should not show any sticking when folded upon itself. It should allow satisfactory finishing and tooling by hand or with embossing machine.
- c) **Coated and non-woven materials** — Alternative cover materials may be used, provided that their



pH value is in between 6 to 10. Protective coating may be a polyester lamination, using polyvinyl acetate (PVAc) to bond to the paper cover.

- d) **Leather** — Only leather from mature animals shall be used. It should be vegetable tanned and not acid tanned. It should not be artificially grained or dyed. Goatskin, also called morocco, is recommended.

#### 5.3.1.2 Boards

The boards shall be cut with their machine direction running parallel to the spine of the book. The boards shall form squares having a head and tail overhang of between 1.5 mm and 2.0 mm for book blocks up to 38 mm thick, and a maximum of 2.5 mm for book block more than 38 mm thick.

#### 5.3.1.3 Spine inlay

A spine inlay shall be used to reinforce the spine of the case. The inlay shall be cut squarely and the machine direction of the paper or board used shall run parallel to the spine of the book. The width of the inlay shall be equal to the width of the spine + 5 percent and its height shall be equal to the height of the cover boards. The inlay shall be made from a flexible paper or board with a minimum thickness of 0.3 mm.

#### 5.3.1.4 Adhesives

Adhesives or glue used for all processes shall be capable of forming a permanent bond between the surfaces to be joined. The adhesive force shall be such that bonded materials cannot be separated without damage.

The adhesives used for making the case shall be a poly-vinyl acetate emulsion adhesive (PVA) with good long term ageing characteristics. It should be best quality flexible hide glue, clean translucent and amber colour, liquid glue prepared for binding should not be heated over 70 °C. Paste made from best quality starch (or maida) and mixed with a suitable insecticide and fungicide, not harmful to man, could also be used as adhesive.

### 5.3.2 Case Preparation

#### 5.3.2.1 Cover material

The cover material shall be cut squarely, approximately 38 mm larger than the finished case so as to allow 19 mm overhang on all four sides of the unfinished case and resulting in a turn-in of approximately 15 mm to 20 mm.

The corners of the cover material shall be left uncut so that library edition corners can be made or corners shall be straight-cut or cut concave at 45° angle so that traditional corners can be made. The cover material shall be turned-in snugly and uniformly, approximately 15 mm on all sides and shall adhere neatly and tightly to the edges of the board. The overhang of the cover

material shall be cut away (mitred) at a 45° angle at each corner of the case, approximately 3 mm beyond the corner of the cover boards. The small protruding tip of the corner shall be nicked or tucked-in prior to the turning-in of the overhangs at the fore and back edge of the case to avoid visibility of the board at the corners.

5.3.2.2 The boards shall be correctly positioned on the cover material to ensure the correct spine and joint width for the case. The joint width shall be twice the thickness of the board together with three times the thickness of the cover material.

#### 5.3.3 Casing-in

The spine of the book block shall be positioned firmly in the spine of the case and the joints shall be tightly adhered. The amount of adhesive applied to the joints should ensure that the joints are tightly secured and cannot be separated without damaging the bonded surfaces. Endpapers shall adhere to all surfaces smoothly and shall be free of wrinkles and bubbles (air-pockets).

##### 5.3.3.1 Absence of warping

The components of the case (cover material, boards, paper liner, casing-in adhesive, and adhered endpapers) shall form a completed book-cover structure that is free of warping. The component materials shall be applied with their machine direction or warp-thread direction running parallel to the spine of the book block.

##### 5.3.3.2 Joint forming

Cased-in books shall be pressed between pressing boards until thoroughly dried in a pressing machine.

Joint forming device using sufficient hydraulic or pneumatic pressure, dwell and heat to ensure good adhesion of the endpapers to the boards and turn-ins of the covering material to the spine lining as well as endpapers in the joint area of the book binding.

### 5.4 Dust Jacket

If a dust jacket is to be used, its fold around both boards and covers shall not be less than 1/3 of the width of the cover.

### 5.5 Book Pocket

If a book pocket is to be used for holding maps, charts and other similar materials, it shall be firmly attached to the inner side of the back board, and comply with all the relevant material requirements to maintain the overall shape of the volume.

### 5.6 Labels

If labels are required, they shall be firmly and securely fixed to the cover material or endpaper, using a suitable adhesive.







## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 2016* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

### Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: MSD 06 (0540).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002  
Telephones: 2323 0131, 2323 3375, 2323 9402

Website: [www.bis.gov.in](http://www.bis.gov.in)

### Regional Offices:

Telephones

Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019	{ 265 0206 265 0290
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

**Branches :** AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. COIMBATORE.  
DEHRADUN. DURGAPUR. FARIDABAD. GHAZIABAD. GUWAHATI.  
HYDERABAD. JAIPUR. JAMMU. JAMSHEDPUR. KOCHI. LUCKNOW.  
NAGPUR. PARWANOO. PATNA. PUNE. RAIPUR. RAJKOT. VISAKHAPATNAM.

Published by BIS, New Delhi